



US009636503B2

(12) **United States Patent**  
**Mokelke et al.**

(10) **Patent No.:** **US 9,636,503 B2**  
(45) **Date of Patent:** **\*May 2, 2017**

(54) **SYSTEM AND METHOD FOR MAPPING BARORECEPTORS**

(71) Applicant: **Cardiac Pacemakers, Inc.**, St. Paul, MN (US)

(72) Inventors: **Eric A. Mokelke**, Flagstaff, AZ (US);  
**Eric Falbe Hammill**, Ham Lake, MN (US)

(73) Assignee: **Cardiac Pacemakers, Inc.**, St. Paul, MN (US)

(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **15/002,634**

(22) Filed: **Jan. 21, 2016**

(65) **Prior Publication Data**

US 2016/0136432 A1 May 19, 2016

**Related U.S. Application Data**

(63) Continuation of application No. 14/307,209, filed on Jun. 17, 2014, now Pat. No. 9,242,097.  
(Continued)

(51) **Int. Cl.**

**A61N 1/00** (2006.01)

**A61N 1/36** (2006.01)

(Continued)

(52) **U.S. Cl.**

CPC ..... **A61N 1/36185** (2013.01); **A61N 1/05** (2013.01); **A61N 1/36117** (2013.01);

(Continued)

(58) **Field of Classification Search**

CPC ..... A61N 1/36185; A61N 1/05; A61N 1/08;  
A61N 1/36128; A61N 1/36135; A61N 1/36139

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

7,499,742 B2 3/2009 Bolea et al.

7,509,166 B2 3/2009 Libbus

(Continued)

FOREIGN PATENT DOCUMENTS

CN 105339038 A 2/2016

WO WO-2014204980 A1 12/2014

OTHER PUBLICATIONS

"U.S. Appl. No. 14/307,209, Non Final Office Action mailed May 4, 2015", 12 pgs.

(Continued)

*Primary Examiner* — Robert N Wieland

(74) *Attorney, Agent, or Firm* — Schwegman Lundberg & Woessner, P.A.

(57) **ABSTRACT**

An example of a method embodiment may place a set of stimulation electrodes on tissue containing the baroreceptor region, and may test bipolar configurations of the electrodes. Each of the bipolar configurations of the electrodes includes at least one of the electrodes configured to function as an anode and at least one other of the electrodes configured to function as a cathode. Testing the bipolar configurations may include stimulating the tissue using each of the bipolar configurations. For each of the tested bipolar configurations at least one physiological parameter may be monitored for a baroreflex response to stimulation of the tissue, and the baroreflex response may be recorded for each of the tested bipolar configurations.

**20 Claims, 13 Drawing Sheets**

